13. (New) A method for encapsulating a solder joint between an integrated circuit chip and a substrate, comprising the steps of:

forming a composition comprising a cyanate ester, a photoinitiator, and dispersed silica;

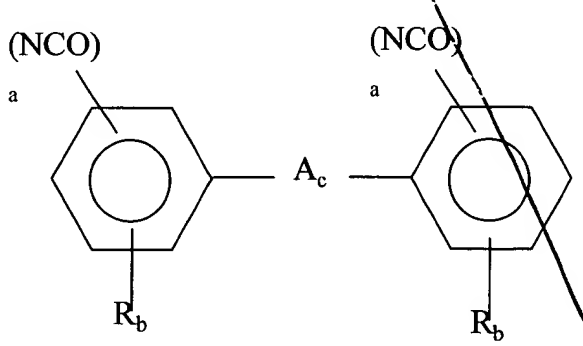
applying an amount of the composition at a thickness sufficient to cover substantially all of the solder joint; and

photocuring the composition to reinforce the solder joint.

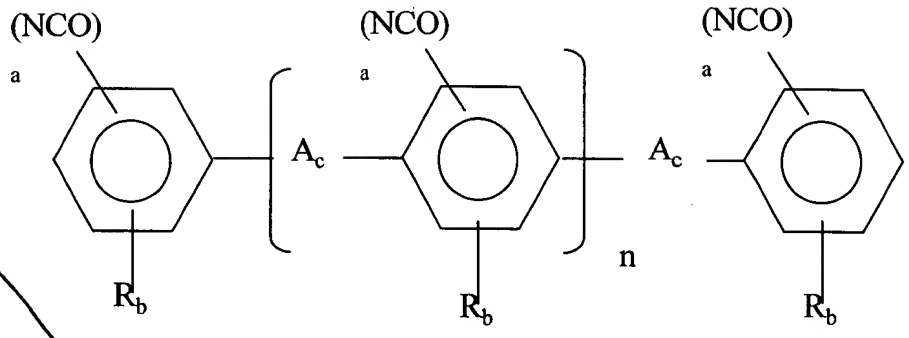
14. (New) The method of claim 13, wherein the cyanate ester includes at least two cyanate groups and is curable through cyclotrimerization.

15. (New) The method of claim 13, wherein the cyanate ester includes compounds depicted by formulas 1 and 2:

(1)



(2)



wherein each a and b independently include integers from 0 to 3, and at least one a is not 0; wherein c includes integers from 0 to 1; wherein n includes integers from 0 to 8, preferably from 0 to 3; wherein each R is independently selected from the non-interfering group consisting of C_{1-9} alkyl, aryl, C_{1-9} alkaryl, heteroatomic, heterocyclic, carbonyloxy, carboxy, hydrogen, C_{1-9} alkoxy, C_{1-9} alkenyloxy, C_{1-9} propargyloxy, C_{1-9} allyloxy, halogen, maleimidyl, glycidyloxy and combinations thereof; and wherein A is selected from the group consisting of oxo, sulfonyl, carbonyl, carboxy, thio, methylene, C_{1-12} polymethylene, CH_2, dicyclopentadienyl, aralkyl, aryl, cycloaliphatic, $CH(CH_3)$, SO_2, O, $C(CF_3)_2$, CH_2OCH_2, $(CH_2S)_{x=(\text{integers from 0 to 9})}$, $(CH_2NH)_{x=(\text{integers from 0 to 9})}$, CH_2SCH_2, CH_2NHCH_2, S, C(=O), OC(=O), OC(=O)O, S(=O), OP(=O), OP(=O)(=O)O, alkylene radicals, $C(CH_3)_2$, and combinations thereof.

16. (New) The method of claim 13, wherein the cyanate ester is selected from the group consisting of: cyanatobenzene 1,3-and 1,4-dicyanatobenzene, 2-tert-butyl-1,4-dicyanatobenzene, 2,4-dimethyl-1,3-dicyanatobenzene, 2,5-di-tert-butyl-1,4-dicyanatobenzene, tetramethyl-1,4-dicyanatobenzene, 4-chloro-1,3-dicyanatobenzene, 1,3,5-tricyanatobenzene, 2,2', 4,4'-dicyanatobiphenyl, 3,3',5,5'-tetramethyl-4,4'dicyanatobiphenyl, 1,3-, 1,4-, 1,5-, 1,6-, 1,8-, 2,6-, 2,7-dicyanatonaphthalene, 1,3,6-tricyanatonaphthalene, bis(4-cyanatophenyl)methane, bis(3-chloro-4-cyanatophenyl)methane, 2,2-bis(4-cyanatophenyl)propane, 2,2-bis(3,5-dichloro-4-cyanatophenyl)propane, 2,2-bis(3,5-dibromo-4-cyanatophenyl)propane, bis (4-cyanatophenyl) ether, bis (p-cyanophenoxyphenoxy)-benzene, di(4-cyanatophenyl)ketone, bis(4-cyanatophenyl)thioether, bis(4-cyanatophenyl)sulfone, tris (4-cyanatophenyl)phosphite, tris(4-cyanatophenyl)phosphate and combinations thereof.

17. (New) The method of claim 13, wherein the photoinitiator is selected from the group consisting of: aryldiazonium, triphenylsulfonium, diphenyliodonium,

diaryliodosyl and triarylsulfoxonium salts.

18. (New) The method of claim 13, wherein the composition contains about 40% to about 75% by weight dispersed silica.

19. (New) The method of claim 13, wherein the dispersed silica is one of fused silica and amorphous silica.

20. (New) The method of claim 19, wherein the particle size of the dispersed silica includes 31 microns or less.

21. (New) The method of claim 13, wherein a coefficient of linear thermal expansion the cured composition includes from about 26 to about 39 ppm/degree C.

22. (New) The method of claim 13, wherein a glass transition temperature of the cured composition includes from about 100 to about 160 degrees C.

23. (New) The method of claim 13, wherein the composition includes from 1 to 20 parts and more preferably from 3 to 15 parts of surface treating agents selected from the group consisting of vinyltrimethoxysilane, vinyltriethoxysilane, N(2-aminoethyl)3-aminopropylmethyldimethoxysilane, 3-

aminopropylethoxysilane, 3-glycidoxypropyltrimethoxysilane, 3-glycidoxypropylmethyl dimethoxysilane and combinations thereof, based on 100 parts of resin.

24. (New) The method of claim 13, wherein the composition includes thermally conductive and electrically insulating fillers selected from the group consisting of Aluminum Oxide, 92% Alumina, 96% Alumina, Aluminum Nitride, Silicon Nitride, Silicon Carbide, Beryllium Oxide, Boron Nitride and Diamond powder.

25. (New) The method of claim 13, wherein the composition further comprises a toughening agent selected from the group consisting of elastomers, rubber, epoxy resins, hydroxy-terminated polysulfone oligomers, and combinations thereof.

26. (New) The method of claim 25, wherein a molecular weight of the toughening agent includes from about 500 to about 1,000 centipoise.

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27. (New) A package assembly comprising:

a substrate, an integrated circuit chip having an outer periphery around the chip and a solder joint between the substrate and the integrated circuit chip; and

a photocured encapsulant, wherein the encapsulant covers the solder joint and extends around the outer periphery the chip.

28. (New) The package assembly of claim 27, wherein an operational life of the package assembly was extended by a factor of about 2 - 5 times compared to the operational life of the package assembly without encapsulating the solder joint.

Respectfully submitted,

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